

ABSTRACT OF THE DISCLOSURE

A system and method are presented for digital communication via a time division
5 multiplexed serial data stream. A serial communication system according to the present
invention includes a serial communication controller having a set of functional units each
configured to perform a specific function of a serial communication protocol. The
functional units are operably coupled in series in order to produce digital data according
to the serial communication protocol. The set of functional units operates alternately
10 upon an active one of the multiple serial data channels within the time division
multiplexed serial data stream. Each functional unit may be a state machine including
one or more programmable registers for storing state information which determines the
operating state of the functional unit. An active channel transition from a first data
channel to a second data channel may be accomplished by saving state information
15 associated with the first data channel and "restoring" saved state information associated
with the second data channel. A memory unit coupled to each functional unit may
include a separate portion allocated to each of the multiple serial data channels. State
information may be retrieved from the functional units and stored in the portion of the
memory unit allocated to the first data channel. State information may then be retrieved
20 from the portion of the memory unit allocated to the second data channel and stored
within the memory elements of the functional units, thus accomplishing the state
"restoring" activity.

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